

AXIS EXPLORATION

ARAPAHOE COUNTY

Sec 4-T4S-R65W

JAMASO 4-65 5-6-1

ORIGINAL WELLBORE

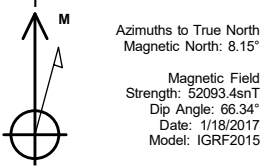
Plan: PROPOSAL 1

Standard Planning Report

18 October, 2018



Project: ARAPAHOE COUNTY
Site: Sec 4-T4S-R65W
Well: JAMASO 4-65 5-6-1
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1

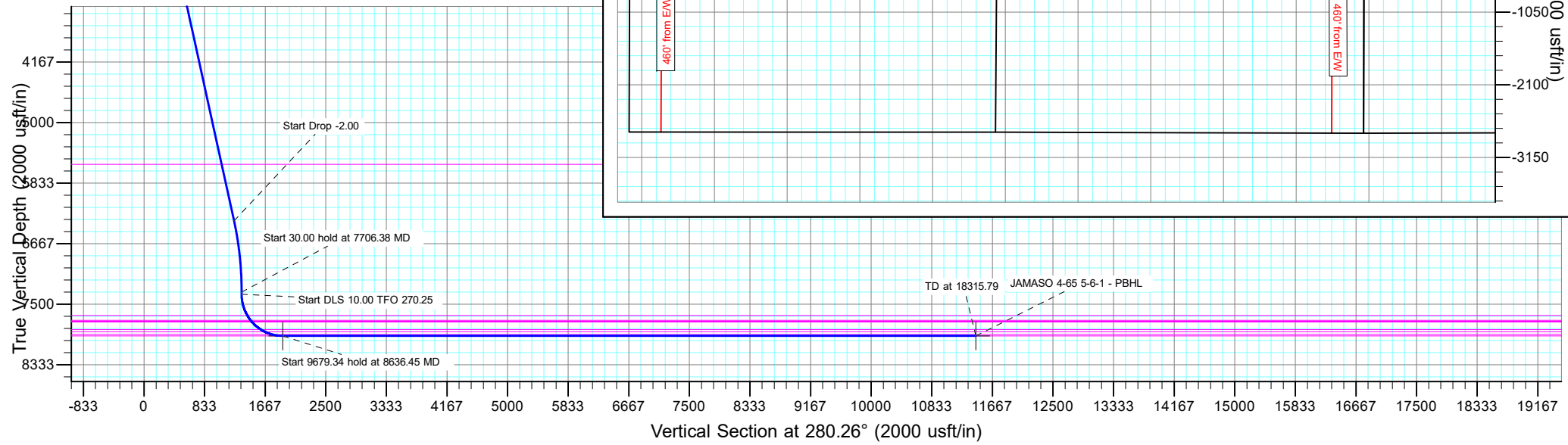
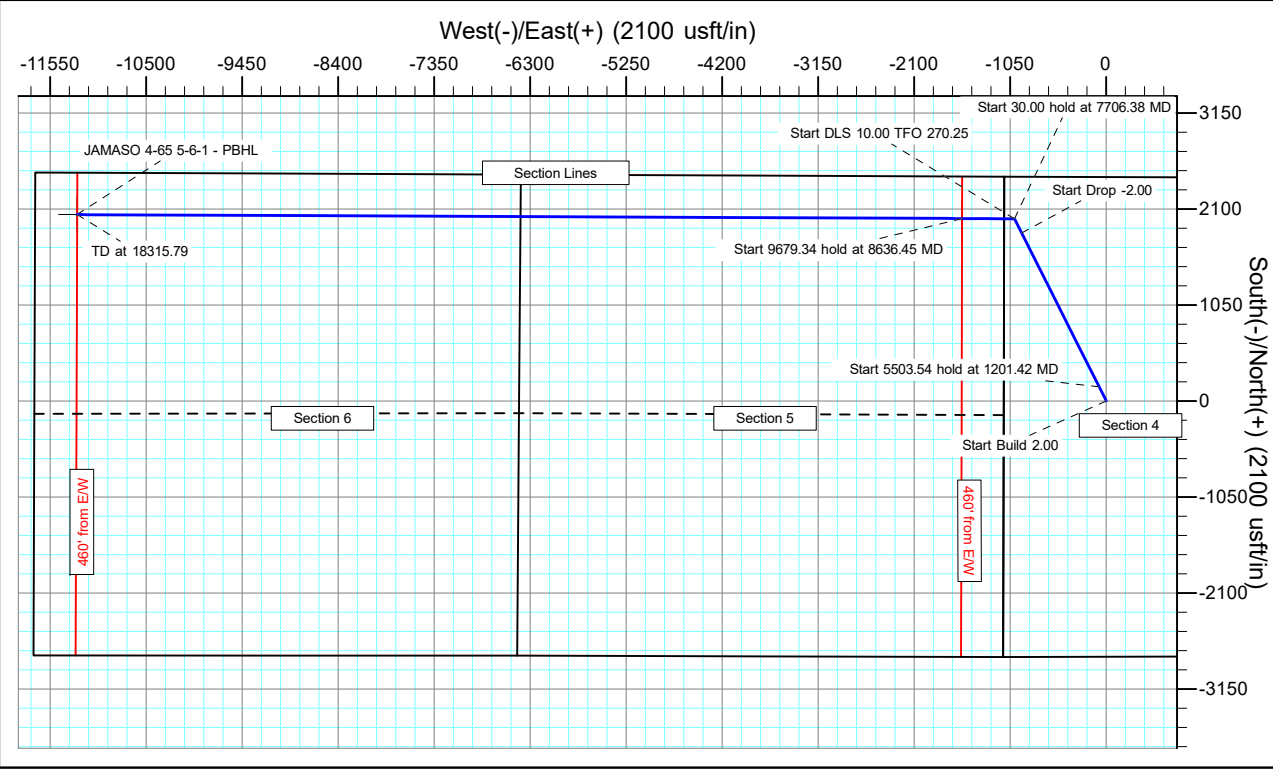


WELL DETAILS: JAMASO 4-65 5-6-1											ANNOTATIONS									
											MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation	
											200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	Start Build 2.00	
											1201.42	20.03	333.27	1181.15	154.74	-77.92	104.24	173.25	Start 5503.54 hold at 1201.42 MD	
											6704.96	20.03	333.27	6351.85	1838.25	-925.64	1238.33	2058.14	Start Drop -2.00	
											7706.38	0.00	0.00	7333.00	1992.99	-1003.56	1342.58	2231.40	Start 30.00 hold at 7706.38 MD	
											7736.38	0.00	0.00	7363.00	1992.99	-1003.56	1342.58	2231.40	Start DLS 10.00 TFO 270.25	
											8636.45	90.00	270.25	7936.00	1995.52	-1576.56	1906.86	2804.40	Start 9679.34 hold at 8636.45 MD	
											18315.79	90.00	270.25	7935.95	2038.27	-11255.80	11438.86	12483.74	TD at 18315.79	
SECTION DETAILS											DESIGN TARGET DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		JAMASO 4-65 5-6-1 - LP	7936.00	1995.52	-1576.56	1148750.86	3230622.90	39.738759°N	104.679928°W	Point	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00		- plan hits target center									
3	1201.42	20.03	333.27	1181.15	154.74	-77.92	2.00	333.27	104.24		JAMASO 4-65 5-6-1 - PBHL	7936.00	2038.08	-11255.80	1148703.29	3220943.68	39.738869°N	104.714346°W	Point	
4	6704.96	20.03	333.27	6351.85	1838.25	-925.64	0.00	0.00	1238.33		- plan hits target center									
5	7706.38	0.00	0.00	7333.00	1992.99	-1003.56	2.00	180.00	1342.58											
6	7736.38	0.00	0.00	7363.00	1992.99	-1003.56	0.00	0.00	1342.58											
7	8636.45	90.00	270.25	7936.00	1995.52	-1576.56	10.00	270.25	1906.86	JAMASO 4-65 5-6-1 - L										
8	18315.79	90.00	270.25	7936.00	2038.08	-11255.80	0.00	0.00	11438.83	JAMASO 4-65 5-6-1 - P										

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
293.00	293.02	Denver
877.00	883.47	Upper Arapahoe
1165.00	1184.25	Lower Arapahoe
1718.00	1772.83	Laramie - Fox Hills
1970.00	2041.05	Shale (Base of Fox Hills)
5575.00	5878.50	Shannon Sandstone Member
7655.00	8042.77	Sharon Springs Shale
7720.00	8121.79	Niobrara Formation
7735.00	8141.23	Niobrara A Chalk
7745.00	8154.51	Niobrara A Landing Point
7849.00	8316.55	Niobrara B Chalk
7879.00	8378.70	Niobrara B Landing Point
7916.00	8484.61	Niobrara C Chalk
7936.00	8636.45	Niobrara C Landing Point

PROJECT DETAILS: ARAPAHOE COUNTY
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

SHL:
2450' FNL, 1121' FWL
Sec 4-T4S-R65W
LP:
460' FNL, 460' FEL
Sec 5-T4S-R65W
BHL:
460' FNL, 460' FWL
Sec 6-T4S-R65W



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-1
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Project	ARAPAHOE COUNTY		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec 4-T4S-R65W			
Site Position:		Northing:	1,149,213.35 usft	Latitude:	39.740017°N
From:	Lat/Long	Easting:	3,231,079.56 usft	Longitude:	104.678289°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.53 °

Well	JAMASO 4-65 5-6-1					
Well Position	+N/-S	-2,453.70 usft	Northing:	1,146,770.10 usft	Latitude:	39.733281°N
	+E/-W	1,115.72 usft	Easting:	3,232,217.97 usft	Longitude:	104.674322°W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,585.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/18/2017	8.15	66.34	52,093.38208880

Design	PROPOSAL 1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	280.26

Plan Survey Tool Program	Date	10/18/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,315.72	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG
			OWSG MWD - Standard	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,201.42	20.03	333.27	1,181.15	154.74	-77.92	2.00	2.00	0.00	333.27	
6,704.96	20.03	333.27	6,351.85	1,838.25	-925.64	0.00	0.00	0.00	0.00	
7,706.38	0.00	0.00	7,333.00	1,992.99	-1,003.56	2.00	-2.00	0.00	180.00	
7,736.38	0.00	0.00	7,363.00	1,992.99	-1,003.56	0.00	0.00	0.00	0.00	
8,636.45	90.00	270.25	7,936.00	1,995.52	-1,576.56	10.00	10.00	-9.97	270.25	JAMASO 4-65 5-6-1 -
18,315.79	90.00	270.25	7,936.00	2,038.08	-11,255.80	0.00	0.00	0.00	0.00	JAMASO 4-65 5-6-1 -

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-1
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
293.02	1.86	333.27	293.00	1.35	-0.68	0.91	2.00	2.00	0.00
Denver									
300.00	2.00	333.27	299.98	1.56	-0.78	1.05	2.00	2.00	0.00
400.00	4.00	333.27	399.84	6.23	-3.14	4.20	2.00	2.00	0.00
500.00	6.00	333.27	499.45	14.02	-7.06	9.44	2.00	2.00	0.00
600.00	8.00	333.27	598.70	24.90	-12.54	16.77	2.00	2.00	0.00
700.00	10.00	333.27	697.47	38.87	-19.57	26.19	2.00	2.00	0.00
800.00	12.00	333.27	795.62	55.91	-28.16	37.67	2.00	2.00	0.00
883.47	13.67	333.27	877.00	72.47	-36.49	48.82	2.00	2.00	0.00
Upper Arapahoe									
900.00	14.00	333.27	893.06	76.00	-38.27	51.20	2.00	2.00	0.00
1,000.00	16.00	333.27	989.64	99.12	-49.91	66.77	2.00	2.00	0.00
1,100.00	18.00	333.27	1,085.27	125.23	-63.06	84.36	2.00	2.00	0.00
1,184.25	19.69	333.27	1,165.00	149.53	-75.30	100.73	2.00	2.00	0.00
Lower Arapahoe									
1,201.42	20.03	333.27	1,181.15	154.74	-77.92	104.24	2.00	2.00	0.00
Start 5503.54 hold at 1201.42 MD									
1,300.00	20.03	333.27	1,273.77	184.90	-93.10	124.56	0.00	0.00	0.00
1,400.00	20.03	333.27	1,367.72	215.49	-108.51	145.16	0.00	0.00	0.00
1,500.00	20.03	333.27	1,461.67	246.08	-123.91	165.77	0.00	0.00	0.00
1,600.00	20.03	333.27	1,555.62	276.67	-139.31	186.38	0.00	0.00	0.00
1,700.00	20.03	333.27	1,649.58	307.26	-154.72	206.98	0.00	0.00	0.00
1,772.83	20.03	333.27	1,718.00	329.53	-165.94	221.99	0.00	0.00	0.00
Laramie - Fox Hills									
1,800.00	20.03	333.27	1,743.53	337.85	-170.12	227.59	0.00	0.00	0.00
1,900.00	20.03	333.27	1,837.48	368.44	-185.52	248.20	0.00	0.00	0.00
2,000.00	20.03	333.27	1,931.43	399.02	-200.93	268.80	0.00	0.00	0.00
2,041.05	20.03	333.27	1,970.00	411.58	-207.25	277.26	0.00	0.00	0.00
Pierre Shale (Base of Fox Hills)									
2,100.00	20.03	333.27	2,025.39	429.61	-216.33	289.41	0.00	0.00	0.00
2,200.00	20.03	333.27	2,119.34	460.20	-231.73	310.02	0.00	0.00	0.00
2,300.00	20.03	333.27	2,213.29	490.79	-247.14	330.62	0.00	0.00	0.00
2,400.00	20.03	333.27	2,307.24	521.38	-262.54	351.23	0.00	0.00	0.00
2,500.00	20.03	333.27	2,401.20	551.97	-277.94	371.84	0.00	0.00	0.00
2,600.00	20.03	333.27	2,495.15	582.56	-293.35	392.44	0.00	0.00	0.00
2,700.00	20.03	333.27	2,589.10	613.15	-308.75	413.05	0.00	0.00	0.00
2,800.00	20.03	333.27	2,683.05	643.74	-324.15	433.66	0.00	0.00	0.00
2,900.00	20.03	333.27	2,777.00	674.33	-339.56	454.26	0.00	0.00	0.00
3,000.00	20.03	333.27	2,870.96	704.92	-354.96	474.87	0.00	0.00	0.00
3,100.00	20.03	333.27	2,964.91	735.51	-370.36	495.48	0.00	0.00	0.00
3,200.00	20.03	333.27	3,058.86	766.10	-385.76	516.08	0.00	0.00	0.00
3,300.00	20.03	333.27	3,152.81	796.69	-401.17	536.69	0.00	0.00	0.00
3,400.00	20.03	333.27	3,246.77	827.28	-416.57	557.29	0.00	0.00	0.00
3,500.00	20.03	333.27	3,340.72	857.87	-431.97	577.90	0.00	0.00	0.00
3,600.00	20.03	333.27	3,434.67	888.46	-447.38	598.51	0.00	0.00	0.00
3,700.00	20.03	333.27	3,528.62	919.05	-462.78	619.11	0.00	0.00	0.00
3,800.00	20.03	333.27	3,622.57	949.63	-478.18	639.72	0.00	0.00	0.00
3,900.00	20.03	333.27	3,716.53	980.22	-493.59	660.33	0.00	0.00	0.00
4,000.00	20.03	333.27	3,810.48	1,010.81	-508.99	680.93	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-1
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,100.00	20.03	333.27	3,904.43	1,041.40	-524.39	701.54	0.00	0.00	0.00	
4,200.00	20.03	333.27	3,998.38	1,071.99	-539.80	722.15	0.00	0.00	0.00	
4,300.00	20.03	333.27	4,092.34	1,102.58	-555.20	742.75	0.00	0.00	0.00	
4,400.00	20.03	333.27	4,186.29	1,133.17	-570.60	763.36	0.00	0.00	0.00	
4,500.00	20.03	333.27	4,280.24	1,163.76	-586.01	783.97	0.00	0.00	0.00	
4,600.00	20.03	333.27	4,374.19	1,194.35	-601.41	804.57	0.00	0.00	0.00	
4,700.00	20.03	333.27	4,468.14	1,224.94	-616.81	825.18	0.00	0.00	0.00	
4,800.00	20.03	333.27	4,562.10	1,255.53	-632.22	845.79	0.00	0.00	0.00	
4,900.00	20.03	333.27	4,656.05	1,286.12	-647.62	866.39	0.00	0.00	0.00	
5,000.00	20.03	333.27	4,750.00	1,316.71	-663.02	887.00	0.00	0.00	0.00	
5,100.00	20.03	333.27	4,843.95	1,347.30	-678.43	907.61	0.00	0.00	0.00	
5,200.00	20.03	333.27	4,937.91	1,377.89	-693.83	928.21	0.00	0.00	0.00	
5,300.00	20.03	333.27	5,031.86	1,408.48	-709.23	948.82	0.00	0.00	0.00	
5,400.00	20.03	333.27	5,125.81	1,439.07	-724.63	969.43	0.00	0.00	0.00	
5,500.00	20.03	333.27	5,219.76	1,469.66	-740.04	990.03	0.00	0.00	0.00	
5,600.00	20.03	333.27	5,313.72	1,500.25	-755.44	1,010.64	0.00	0.00	0.00	
5,700.00	20.03	333.27	5,407.67	1,530.83	-770.84	1,031.25	0.00	0.00	0.00	
5,800.00	20.03	333.27	5,501.62	1,561.42	-786.25	1,051.85	0.00	0.00	0.00	
5,878.10	20.03	333.27	5,575.00	1,585.32	-798.28	1,067.95	0.00	0.00	0.00	
Shannon Sandstone Member										
5,900.00	20.03	333.27	5,595.57	1,592.01	-801.65	1,072.46	0.00	0.00	0.00	
6,000.00	20.03	333.27	5,689.52	1,622.60	-817.05	1,093.07	0.00	0.00	0.00	
6,100.00	20.03	333.27	5,783.48	1,653.19	-832.46	1,113.67	0.00	0.00	0.00	
6,200.00	20.03	333.27	5,877.43	1,683.78	-847.86	1,134.28	0.00	0.00	0.00	
6,300.00	20.03	333.27	5,971.38	1,714.37	-863.26	1,154.89	0.00	0.00	0.00	
6,400.00	20.03	333.27	6,065.33	1,744.96	-878.67	1,175.49	0.00	0.00	0.00	
6,500.00	20.03	333.27	6,159.29	1,775.55	-894.07	1,196.10	0.00	0.00	0.00	
6,600.00	20.03	333.27	6,253.24	1,806.14	-909.47	1,216.71	0.00	0.00	0.00	
6,704.96	20.03	333.27	6,351.85	1,838.25	-925.64	1,238.33	0.00	0.00	0.00	
Start Drop -2.00										
6,800.00	18.13	333.27	6,441.67	1,865.99	-939.61	1,257.02	2.00	-2.00	0.00	
6,900.00	16.13	333.27	6,537.23	1,892.29	-952.85	1,274.74	2.00	-2.00	0.00	
7,000.00	14.13	333.27	6,633.76	1,915.60	-964.59	1,290.44	2.00	-2.00	0.00	
7,100.00	12.13	333.27	6,731.14	1,935.89	-974.81	1,304.11	2.00	-2.00	0.00	
7,200.00	10.13	333.27	6,829.25	1,953.12	-983.48	1,315.72	2.00	-2.00	0.00	
7,300.00	8.13	333.27	6,927.98	1,967.29	-990.62	1,325.26	2.00	-2.00	0.00	
7,400.00	6.13	333.27	7,027.20	1,978.37	-996.20	1,332.73	2.00	-2.00	0.00	
7,500.00	4.13	333.27	7,126.80	1,986.35	-1,000.22	1,338.11	2.00	-2.00	0.00	
7,600.00	2.13	333.27	7,226.64	1,991.23	-1,002.67	1,341.39	2.00	-2.00	0.00	
7,706.38	0.00	0.00	7,333.00	1,992.99	-1,003.56	1,342.58	2.00	-2.00	0.00	
Start 30.00 hold at 7706.38 MD										
7,736.38	0.00	0.00	7,363.00	1,992.99	-1,003.56	1,342.58	0.00	0.00	0.00	
Start DLS 10.00 TFO 270.25										
7,750.00	1.36	270.25	7,376.62	1,992.99	-1,003.72	1,342.74	10.00	10.00	0.00	
7,800.00	6.36	270.25	7,426.49	1,993.01	-1,007.09	1,346.05	10.00	10.00	0.00	
7,850.00	11.36	270.25	7,475.88	1,993.04	-1,014.79	1,353.63	10.00	10.00	0.00	
7,900.00	16.36	270.25	7,524.41	1,993.09	-1,026.76	1,365.43	10.00	10.00	0.00	
7,950.00	21.36	270.25	7,571.71	1,993.16	-1,042.92	1,381.34	10.00	10.00	0.00	
8,000.00	26.36	270.25	7,617.42	1,993.25	-1,063.14	1,401.25	10.00	10.00	0.00	
8,042.77	30.64	270.25	7,655.00	1,993.34	-1,083.54	1,421.34	10.00	10.00	0.00	
Sharon Springs Shale										
8,050.00	31.36	270.25	7,661.19	1,993.36	-1,087.26	1,425.01	10.00	10.00	0.00	
8,100.00	36.36	270.25	7,702.70	1,993.48	-1,115.11	1,452.43	10.00	10.00	0.00	
8,121.79	38.54	270.25	7,720.00	1,993.54	-1,128.36	1,465.48	10.00	10.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-1
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Niobrara Formation									
8,141.23	40.48	270.25	7,735.00	1,993.60	-1,140.73	1,477.66	10.00	10.00	0.00
Niobrara A Chalk									
8,150.00	41.36	270.25	7,741.62	1,993.62	-1,146.47	1,483.32	10.00	10.00	0.00
8,154.51	41.81	270.25	7,745.00	1,993.63	-1,149.47	1,486.27	10.00	10.00	0.00
Niobrara A Landing Point									
8,200.00	46.36	270.25	7,777.66	1,993.77	-1,181.11	1,517.42	10.00	10.00	0.00
8,250.00	51.36	270.25	7,810.55	1,993.94	-1,218.75	1,554.49	10.00	10.00	0.00
8,300.00	56.36	270.25	7,840.03	1,994.12	-1,259.11	1,594.24	10.00	10.00	0.00
8,316.55	58.01	270.25	7,849.00	1,994.18	-1,273.02	1,607.94	10.00	10.00	0.00
Niobrara B Chalk									
8,350.00	61.36	270.25	7,865.88	1,994.31	-1,301.89	1,636.37	10.00	10.00	0.00
8,378.70	64.23	270.25	7,879.00	1,994.42	-1,327.41	1,661.50	10.00	10.00	0.00
Niobrara B Landing Point									
8,400.00	66.36	270.25	7,887.90	1,994.51	-1,346.76	1,680.56	10.00	10.00	0.00
8,450.00	71.36	270.25	7,905.93	1,994.71	-1,393.38	1,726.47	10.00	10.00	0.00
8,484.61	74.82	270.25	7,916.00	1,994.86	-1,426.49	1,759.07	10.00	10.00	0.00
Niobrara C Chalk									
8,500.00	76.36	270.25	7,919.83	1,994.92	-1,441.39	1,773.75	10.00	10.00	0.00
8,550.00	81.36	270.25	7,929.49	1,995.14	-1,490.44	1,822.05	10.00	10.00	0.00
8,600.00	86.36	270.25	7,934.84	1,995.36	-1,540.13	1,870.99	10.00	10.00	0.00
8,636.45	90.00	270.25	7,936.00	1,995.52	-1,576.56	1,906.86	10.00	10.00	0.00
Start 9679.34 hold at 8636.45 MD - Niobrara C Landing Point									
8,700.00	90.00	270.25	7,936.00	1,995.80	-1,640.11	1,969.44	0.00	0.00	0.00
8,800.00	90.00	270.25	7,936.00	1,996.24	-1,740.11	2,067.92	0.00	0.00	0.00
8,900.00	90.00	270.25	7,936.00	1,996.68	-1,840.11	2,166.40	0.00	0.00	0.00
9,000.00	90.00	270.25	7,936.00	1,997.13	-1,940.10	2,264.87	0.00	0.00	0.00
9,100.00	90.00	270.25	7,936.00	1,997.57	-2,040.10	2,363.35	0.00	0.00	0.00
9,200.00	90.00	270.25	7,936.00	1,998.01	-2,140.10	2,461.83	0.00	0.00	0.00
9,300.00	90.00	270.25	7,936.00	1,998.45	-2,240.10	2,560.31	0.00	0.00	0.00
9,400.00	90.00	270.25	7,936.00	1,998.89	-2,340.10	2,658.79	0.00	0.00	0.00
9,500.00	90.00	270.25	7,936.00	1,999.33	-2,440.10	2,757.26	0.00	0.00	0.00
9,600.00	90.00	270.25	7,936.00	1,999.78	-2,540.10	2,855.74	0.00	0.00	0.00
9,700.00	90.00	270.25	7,936.00	2,000.22	-2,640.10	2,954.22	0.00	0.00	0.00
9,800.00	90.00	270.25	7,935.99	2,000.66	-2,740.10	3,052.70	0.00	0.00	0.00
9,900.00	90.00	270.25	7,935.99	2,001.10	-2,840.10	3,151.18	0.00	0.00	0.00
10,000.00	90.00	270.25	7,935.99	2,001.54	-2,940.09	3,249.65	0.00	0.00	0.00
10,100.00	90.00	270.25	7,935.99	2,001.98	-3,040.09	3,348.13	0.00	0.00	0.00
10,200.00	90.00	270.25	7,935.99	2,002.43	-3,140.09	3,446.61	0.00	0.00	0.00
10,300.00	90.00	270.25	7,935.99	2,002.87	-3,240.09	3,545.09	0.00	0.00	0.00
10,400.00	90.00	270.25	7,935.99	2,003.31	-3,340.09	3,643.56	0.00	0.00	0.00
10,500.00	90.00	270.25	7,935.99	2,003.75	-3,440.09	3,742.04	0.00	0.00	0.00
10,600.00	90.00	270.25	7,935.99	2,004.19	-3,540.09	3,840.52	0.00	0.00	0.00
10,700.00	90.00	270.25	7,935.99	2,004.63	-3,640.09	3,939.00	0.00	0.00	0.00
10,800.00	90.00	270.25	7,935.99	2,005.08	-3,740.09	4,037.48	0.00	0.00	0.00
10,900.00	90.00	270.25	7,935.99	2,005.52	-3,840.09	4,135.95	0.00	0.00	0.00
11,000.00	90.00	270.25	7,935.99	2,005.96	-3,940.08	4,234.43	0.00	0.00	0.00
11,100.00	90.00	270.25	7,935.99	2,006.40	-4,040.08	4,332.91	0.00	0.00	0.00
11,200.00	90.00	270.25	7,935.99	2,006.84	-4,140.08	4,431.39	0.00	0.00	0.00
11,300.00	90.00	270.25	7,935.99	2,007.28	-4,240.08	4,529.87	0.00	0.00	0.00
11,400.00	90.00	270.25	7,935.99	2,007.73	-4,340.08	4,628.34	0.00	0.00	0.00
11,500.00	90.00	270.25	7,935.99	2,008.17	-4,440.08	4,726.82	0.00	0.00	0.00
11,600.00	90.00	270.25	7,935.99	2,008.61	-4,540.08	4,825.30	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-1
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,700.00	90.00	270.25	7,935.99	2,009.05	-4,640.08	4,923.78	0.00	0.00	0.00
11,800.00	90.00	270.25	7,935.98	2,009.49	-4,740.08	5,022.25	0.00	0.00	0.00
11,900.00	90.00	270.25	7,935.98	2,009.93	-4,840.08	5,120.73	0.00	0.00	0.00
12,000.00	90.00	270.25	7,935.98	2,010.38	-4,940.08	5,219.21	0.00	0.00	0.00
12,100.00	90.00	270.25	7,935.98	2,010.82	-5,040.07	5,317.69	0.00	0.00	0.00
12,200.00	90.00	270.25	7,935.98	2,011.26	-5,140.07	5,416.17	0.00	0.00	0.00
12,300.00	90.00	270.25	7,935.98	2,011.70	-5,240.07	5,514.64	0.00	0.00	0.00
12,400.00	90.00	270.25	7,935.98	2,012.14	-5,340.07	5,613.12	0.00	0.00	0.00
12,500.00	90.00	270.25	7,935.98	2,012.58	-5,440.07	5,711.60	0.00	0.00	0.00
12,600.00	90.00	270.25	7,935.98	2,013.03	-5,540.07	5,810.08	0.00	0.00	0.00
12,700.00	90.00	270.25	7,935.98	2,013.47	-5,640.07	5,908.56	0.00	0.00	0.00
12,800.00	90.00	270.25	7,935.98	2,013.91	-5,740.07	6,007.03	0.00	0.00	0.00
12,900.00	90.00	270.25	7,935.98	2,014.35	-5,840.07	6,105.51	0.00	0.00	0.00
13,000.00	90.00	270.25	7,935.98	2,014.79	-5,940.07	6,203.99	0.00	0.00	0.00
13,100.00	90.00	270.25	7,935.98	2,015.23	-6,040.06	6,302.47	0.00	0.00	0.00
13,200.00	90.00	270.25	7,935.98	2,015.68	-6,140.06	6,400.94	0.00	0.00	0.00
13,300.00	90.00	270.25	7,935.98	2,016.12	-6,240.06	6,499.42	0.00	0.00	0.00
13,400.00	90.00	270.25	7,935.98	2,016.56	-6,340.06	6,597.90	0.00	0.00	0.00
13,500.00	90.00	270.25	7,935.98	2,017.00	-6,440.06	6,696.38	0.00	0.00	0.00
13,600.00	90.00	270.25	7,935.98	2,017.44	-6,540.06	6,794.86	0.00	0.00	0.00
13,700.00	90.00	270.25	7,935.98	2,017.88	-6,640.06	6,893.33	0.00	0.00	0.00
13,800.00	90.00	270.25	7,935.98	2,018.33	-6,740.06	6,991.81	0.00	0.00	0.00
13,900.00	90.00	270.25	7,935.97	2,018.77	-6,840.06	7,090.29	0.00	0.00	0.00
14,000.00	90.00	270.25	7,935.97	2,019.21	-6,940.06	7,188.77	0.00	0.00	0.00
14,100.00	90.00	270.25	7,935.97	2,019.65	-7,040.05	7,287.25	0.00	0.00	0.00
14,200.00	90.00	270.25	7,935.97	2,020.09	-7,140.05	7,385.72	0.00	0.00	0.00
14,300.00	90.00	270.25	7,935.97	2,020.53	-7,240.05	7,484.20	0.00	0.00	0.00
14,400.00	90.00	270.25	7,935.97	2,020.98	-7,340.05	7,582.68	0.00	0.00	0.00
14,500.00	90.00	270.25	7,935.97	2,021.42	-7,440.05	7,681.16	0.00	0.00	0.00
14,600.00	90.00	270.25	7,935.97	2,021.86	-7,540.05	7,779.64	0.00	0.00	0.00
14,700.00	90.00	270.25	7,935.97	2,022.30	-7,640.05	7,878.11	0.00	0.00	0.00
14,800.00	90.00	270.25	7,935.97	2,022.74	-7,740.05	7,976.59	0.00	0.00	0.00
14,900.00	90.00	270.25	7,935.97	2,023.18	-7,840.05	8,075.07	0.00	0.00	0.00
15,000.00	90.00	270.25	7,935.97	2,023.62	-7,940.05	8,173.55	0.00	0.00	0.00
15,100.00	90.00	270.25	7,935.97	2,024.07	-8,040.04	8,272.02	0.00	0.00	0.00
15,200.00	90.00	270.25	7,935.97	2,024.51	-8,140.04	8,370.50	0.00	0.00	0.00
15,300.00	90.00	270.25	7,935.97	2,024.95	-8,240.04	8,468.98	0.00	0.00	0.00
15,400.00	90.00	270.25	7,935.97	2,025.39	-8,340.04	8,567.46	0.00	0.00	0.00
15,500.00	90.00	270.25	7,935.97	2,025.83	-8,440.04	8,665.94	0.00	0.00	0.00
15,600.00	90.00	270.25	7,935.97	2,026.27	-8,540.04	8,764.41	0.00	0.00	0.00
15,700.00	90.00	270.25	7,935.97	2,026.72	-8,640.04	8,862.89	0.00	0.00	0.00
15,800.00	90.00	270.25	7,935.97	2,027.16	-8,740.04	8,961.37	0.00	0.00	0.00
15,900.00	90.00	270.25	7,935.97	2,027.60	-8,840.04	9,059.85	0.00	0.00	0.00
16,000.00	90.00	270.25	7,935.96	2,028.04	-8,940.04	9,158.33	0.00	0.00	0.00
16,100.00	90.00	270.25	7,935.96	2,028.48	-9,040.04	9,256.80	0.00	0.00	0.00
16,200.00	90.00	270.25	7,935.96	2,028.92	-9,140.03	9,355.28	0.00	0.00	0.00
16,300.00	90.00	270.25	7,935.96	2,029.37	-9,240.03	9,453.76	0.00	0.00	0.00
16,400.00	90.00	270.25	7,935.96	2,029.81	-9,340.03	9,552.24	0.00	0.00	0.00
16,500.00	90.00	270.25	7,935.96	2,030.25	-9,440.03	9,650.71	0.00	0.00	0.00
16,600.00	90.00	270.25	7,935.96	2,030.69	-9,540.03	9,749.19	0.00	0.00	0.00
16,700.00	90.00	270.25	7,935.96	2,031.13	-9,640.03	9,847.67	0.00	0.00	0.00
16,800.00	90.00	270.25	7,935.96	2,031.57	-9,740.03	9,946.15	0.00	0.00	0.00
16,900.00	90.00	270.25	7,935.96	2,032.02	-9,840.03	10,044.63	0.00	0.00	0.00
17,000.00	90.00	270.25	7,935.96	2,032.46	-9,940.03	10,143.10	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-1
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
17,100.00	90.00	270.25	7,935.96	2,032.90	-10,040.03	10,241.58	0.00	0.00	0.00	
17,200.00	90.00	270.25	7,935.96	2,033.34	-10,140.02	10,340.06	0.00	0.00	0.00	
17,300.00	90.00	270.25	7,935.96	2,033.78	-10,240.02	10,438.54	0.00	0.00	0.00	
17,400.00	90.00	270.25	7,935.96	2,034.22	-10,340.02	10,537.02	0.00	0.00	0.00	
17,500.00	90.00	270.25	7,935.96	2,034.67	-10,440.02	10,635.49	0.00	0.00	0.00	
17,600.00	90.00	270.25	7,935.96	2,035.11	-10,540.02	10,733.97	0.00	0.00	0.00	
17,700.00	90.00	270.25	7,935.96	2,035.55	-10,640.02	10,832.45	0.00	0.00	0.00	
17,800.00	90.00	270.25	7,935.96	2,035.99	-10,740.02	10,930.93	0.00	0.00	0.00	
17,900.00	90.00	270.25	7,935.96	2,036.43	-10,840.02	11,029.40	0.00	0.00	0.00	
18,000.00	90.00	270.25	7,935.95	2,036.87	-10,940.02	11,127.88	0.00	0.00	0.00	
18,100.00	90.00	270.25	7,935.95	2,037.32	-11,040.02	11,226.36	0.00	0.00	0.00	
18,200.00	90.00	270.25	7,935.95	2,037.76	-11,140.01	11,324.84	0.00	0.00	0.00	
18,300.00	90.00	270.25	7,935.95	2,038.20	-11,240.01	11,423.32	0.00	0.00	0.00	
18,315.79	90.00	270.25	7,935.95	2,038.27	-11,255.80	11,438.86	0.00	0.00	0.00	
TD at 18315.79										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude		
JAMASO 4-65 5-6-1 - PI	0.00	0.00	7,936.00	2,038.08	-11,255.80	1,148,703.29	3,220,943.68	39.738869°N		
- hit/miss target										
- Shape										
- plan misses target center by 0.19usft at 18315.79usft MD (7935.95 TVD, 2038.27 N, -11255.80 E)										
- Point										
JAMASO 4-65 5-6-1 - LF	0.00	0.00	7,936.00	1,995.52	-1,576.56	1,148,750.85	3,230,622.90	39.738759°N		
- plan hits target center										
- Point										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
293.02	293.00	Denver				
883.47	877.00	Upper Arapahoe				
1,184.25	1,165.00	Lower Arapahoe				
1,772.83	1,718.00	Laramie - Fox Hills				
2,041.05	1,970.00	Pierre Shale (Base of Fox Hills)				
5,878.10	5,575.00	Shannon Sandstone Member				
8,042.77	7,655.00	Sharon Springs Shale				
8,121.79	7,720.00	Niobrara Formation				
8,141.23	7,735.00	Niobrara A Chalk				
8,154.51	7,745.00	Niobrara A Landing Point				
8,316.55	7,849.00	Niobrara B Chalk				
8,378.70	7,879.00	Niobrara B Landing Point				
8,484.61	7,916.00	Niobrara C Chalk				
8,636.45	7,936.00	Niobrara C Landing Point				

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-1
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.00	200.00	0.00	0.00	Start Build 2.00
1,201.42	1,181.15	154.74	-77.92	Start 5503.54 hold at 1201.42 MD
6,704.96	6,351.85	1,838.25	-925.64	Start Drop -2.00
7,706.38	7,333.00	1,992.99	-1,003.56	Start 30.00 hold at 7706.38 MD
7,736.38	7,363.00	1,992.99	-1,003.56	Start DLS 10.00 TFO 270.25
8,636.45	7,936.00	1,995.52	-1,576.56	Start 9679.34 hold at 8636.45 MD
18,315.79	7,935.95	2,038.27	-11,255.80	TD at 18315.79